

Passively Powered and Programmable Sensor-RFID for ISHM Systems, Phase I

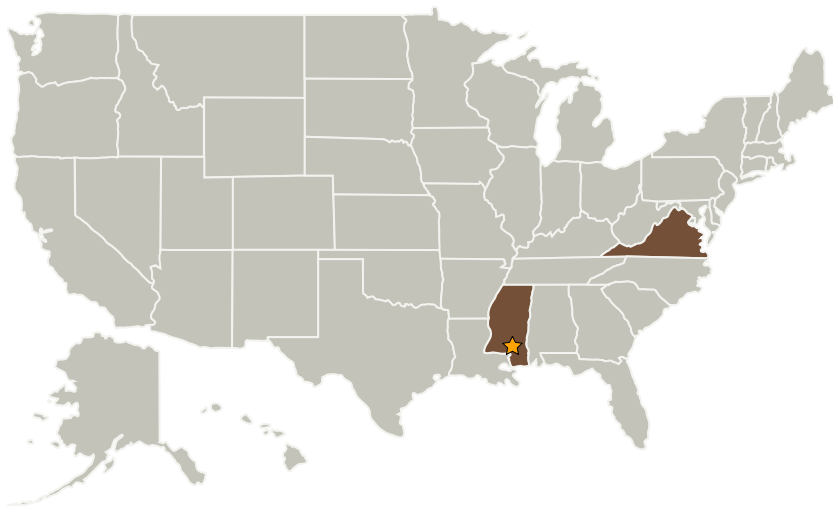
Completed Technology Project (2009 - 2009)



Project Introduction

To date there are several approaches for incorporating sensing capabilities into RFID. Active tags use batteries to power their communication circuitry, sensors, and microcontroller. Active tags benefit from relatively long wireless range and can achieve high data and sensor activity rates. However, the batteries required by active tags are disadvantageous for device cost, lifetime, weight, and volume. In contrast, passive sensor tags receive all of their operating power from external RF transmitting sources and are not limited by battery life. One attractive feature of passive sensor tags is the prospect of permanently embedding them in objects for structural monitoring. Another is their suitability for applications in which neither batteries nor wired connections are feasible, for weight, volume, cost, or other reasons. A limitation of purely passive sensor tags is the requirement of proximity to a RF transmitter. Since lower power consumption is one major trend in RF circuit design, a self-powered system by means of energy harvesting becomes very attractive. It can serve as the enabling technology for novel applications such as ambient intelligence. Using a power harvesting technique for wireless rechargeable battery smart sensor and enhanced RFID are the key elements for successfully distributing sensors across sensor networks.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Stennis Space Center (SSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Stennis Space Center(SSC)	Lead Organization	NASA Center	Stennis Space Center, Mississippi
Mobitrum Corporation	Supporting Organization	Industry	McLean, Virginia

Primary U.S. Work Locations	
Mississippi	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.3 Human Health and Performance
 - └ TX06.3.4 Contact-less / Wearable Human Health and Performance Monitoring